WHAT IS CLAIMED IS:

1. An optical device comprising:

a light-emitting layer having two end faces that form a laser resonator;

an electromagnetic wave producing portion that is located between the two end faces in a direction in which the two end faces oppose to each other and produces an electromagnetic wave from the light-emitting layer.

2. The optical device as claimed in claim 1, wherein

the electromagnetic wave producing portion has a refractive index different from a refractive index of a neighborhood of the electromagnetic wave producing portion and, assuming that a wavelength of laser light generated by the laser resonator is λ and a refractive index of the light-emitting layer is n, then the electromagnetic wave producing portion has a dimension smaller than λ/n.

3. The optical device as claimed in claim 1, wherein

the light-emitting layer has a stripe-shaped light-emitting region,

the electromagnetic wave producing portion is located on a side of the light-emitting layer, and

a distance between a center in a widthwise direction of the light-emitting region and a side surface of the light-emitting layer on the electromagnetic wave producing portion side is smaller than a width of the light-emitting region.

4. The optical device as claimed in claim 1, further comprising:

a low refractive index layer that is put in contact with the light-emitting layer and has a refractive index lower than a refractive index of the light-emitting layer, the electromagnetic wave producing portion is formed at the low refractive index layer.

5. The optical device as claimed in claim 1, further comprising:

a low refractive index layer that is put in contact with the light-emitting layer and has a refractive index lower than a refractive index of the light-emitting layer, the low refractive index layer having a thickness smaller than a distance of leak of an electromagnetic wave leaking toward the low refractive index layer side when light from the light-emitting layer side is totally reflected on an interface where the light-emitting layer and the low refractive index layer are put in contact with each other;

a shield layer for shielding the electromagnetic wave leaked from the interface where the light-emitting layer and the low refractive index layer are put in contact with each other, the shield layer being provided on a side of the low refractive index layer, the side being opposite from the side put in contact with the light-emitting layer; and

the electromagnetic wave producing portion is formed at the shield layer.

6. The optical device as claimed in claim 1, wherein

the electromagnetic wave producing portion is provided with a metal film that has a prescribed thickness.

7. The optical device as claimed in claim 1, wherein

the electromagnetic wave producing portion is provided with a metal particle that has a prescribed diameter.

8. An optical sensor comprising:

the optical device claimed in claim 1; and

the optical device detecting a state of an object to be measured by measuring a threshold current of laser oscillation in the light-emitting layer in a state in which the electromagnetic wave producing portion of the optical device and the object to be measured are brought close to each other.